

ENTERED



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**RAW SEQUENCE LISTING**  
**PATENT APPLICATION: US/09/923,844B**

**DATE: 05/23/2002**  
**TIME: 17:50:12**

**Input Set : A:\Seqlist.txt**  
**Output Set: N:\CRF3\05232002\I923844B.raw**

4 <110> APPLICANT: Pioneer Hi-Bred International, Inc.  
 5       Bao, Zhongmeng  
 6       Lu, Guihua  
 8 <120> TITLE OF INVENTION: Sclerotinia-inducible Genes and  
 9       Promoters and Their Uses  
 11 <130> FILE REFERENCE: 35718/234631  
 C--> 13 <140> CURRENT APPLICATION NUMBER: US/09/923,844B  
 C--> 13 <141> CURRENT FILING DATE: 2001-08-07  
 13 <150> PRIOR APPLICATION NUMBER: US 60/224,603  
 14 <151> PRIOR FILING DATE: 2000-08-11  
 16 <160> NUMBER OF SEQ ID NOS: 20  
 18 <170> SOFTWARE: FastSEQ for Windows Version 4.0  
 20 <210> SEQ ID NO: 1  
 21 <211> LENGTH: 1271  
 22 <212> TYPE: DNA  
 23 <213> ORGANISM: Helianthus annuus  
 25 <220> FEATURE:  
 26 <221> NAME/KEY: CDS  
 27 <222> LOCATION: (1)...(1114)  
 29 <400> SEQUENCE: 1  
 30 atq gaa ttc ctc aaa gct cct acc ctt ctc ctt gtg ata ttc agt ctt      48  
 31 Met Glu Phe Leu Lys Ala Pro Thr Leu Leu Leu Val Ile Phe Ser Leu  
 32       1               5               10               15  
 34 gcc att tgt agt cct ata agc gcc caa aac aaa ggg ggt tat tgg cct      96  
 35 Ala Ile Cys Ser Pro Ile Ser Ala Gln Asn Lys Gly Gly Tyr Trp Pro  
 36       20               25               30  
 38 tca tgg gcc caa gat ttt ttg cca cca tcc aat att caa acc gcg tat      144  
 39 Ser Trp Ala Gln Asp Phe Leu Pro Pro Ser Asn Ile Gln Thr Ala Tyr  
 40       35               40               45  
 42 ttc act cat gtt tat tat gct ttt ctc tcc cct aac aat gtc aca ttc      192  
 43 Phe Thr His Val Tyr Tyr Ala Phe Leu Ser Pro Asn Asn Val Thr Phe  
 44       50               55               60  
 46 caa ttc gac gtc cac cgg aca act gcg tct gcg ctc aat agc ttc aac      240  
 47 Gln Phe Asp Val His Arg Thr Thr Ala Ser Ala Leu Asn Ser Phe Asn  
 48       65               70               75               80  
 50 acc gcc ctt cac gga aag aat cca cct gtc aag acg ttg ttt tcc atc      288  
 51 Thr Ala Leu His Gly Lys Asn Pro Pro Val Lys Thr Leu Phe Ser Ile  
 52       85               90               95  
 54 ggt ggt ggc tcg gct ggc gta aaa caa ctc ttt tcc aag ttg gcc tcg      336  
 55 Gly Gly Ser Ala Gly Val Lys Gln Leu Phe Ser Lys Leu Ala Ser  
 56       100               105               110  
 58 agc cct ggc tcg agg gcc gct ttt atc cgt tcg act ata caa gtg gcg      384  
 59 Ser Pro Gly Ser Arg Ala Ala Phe Ile Arg Ser Thr Ile Gln Val Ala

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60	115	120	125	
62	cgg aac tat tac ttt gat gga gct gac ttg gat tgg gaa tat cct gaa			432
63	Arg Asn Tyr Tyr Phe Asp Gly Ala Asp Leu Asp Trp Glu Tyr Pro Glu			
64	130	135	140	
66	acc caa acc gat atg aac aac ttt gga ctc ttg ctt gac gag tgg cgt			480
67	Thr Gln Thr Asp Met Asn Asn Phe Gly Leu Leu Leu Asp Glu Trp Arg			
68	145	150	155	160
70	gtg gcg gtc aac aat gaa gcc aca tca act ggt aag cca cga ctt ctt			528
71	Val Ala Val Asn Asn Glu Ala Thr Ser Thr Gly Lys Pro Arg Leu Leu			
72	165	170	175	
74	ctt tca gcc gcc act cgt cat gag cca gaa gtt aga gac aat gga gtt			576
75	Leu Ser Ala Ala Thr Arg His Glu Pro Glu Val Arg Asp Asn Gly Val			
76	180	185	190	
78	gca aag tat cca gtg gca tcc ata aat aag aat ttg gat ggg ata aat			624
79	Ala Lys Tyr Pro Val Ala Ser Ile Asn Lys Asn Leu Asp Gly Ile Asn			
80	195	200	205	
82	gca atg tgt tat gat tat cac ggg cca tgg act ccg gat gca act ggg			672
83	Ala Met Cys Tyr Asp Tyr His Gly Pro Trp Thr Pro Asp Ala Thr Gly			
84	210	215	220	
86	gcc cca gcc gcg tta tat aat cca aat ggc agt ctt agc acc agt aac			720
87	Ala Pro Ala Ala Leu Tyr Asn Pro Asn Gly Ser Leu Ser Thr Ser Asn			
88	225	230	235	240
90	ggg cta caa tca tgg atc agc gct ggg atc caa agg caa aag ttg gtg			768
91	Gly Leu Gln Ser Trp Ile Ser Ala Gly Ile Gln Arg Gln Lys Leu Val			
92	245	250	255	
94	atg ggc atg cca tta tat ggt tgg aca tgg aaa cta aag aat cca tct			816
95	Met Gly Met Pro Leu Tyr Gly Trp Thr Trp Lys Leu Lys Asn Pro Ser			
96	260	265	270	
98	gta aat ggt att ggg gct cca gct gcg ggt ata gga ccg ggt aat gag			864
99	Val Asn Gly Ile Gly Ala Pro Ala Ala Gly Ile Gly Pro Gly Asn Glu			
100	275	280	285	
102	gga gca atg ctt tac tca gaa gtg caa cag ttc aat gcc caa aat aac			912
103	Gly Ala Met Leu Tyr Ser Glu Val Gln Gln Phe Asn Ala Gln Asn Asn			
104	290	295	300	
106	gcc agg gtg gtt tat gac aca caa acc gta tct tat tat tct tac tca			960
107	Ala Arg Val Val Tyr Asp Thr Gln Thr Val Ser Tyr Tyr Ser Tyr Ser			
108	305	310	315	320
110	gga acg act tgg att gga tat gac gat gtt aat tca gta cag aga aag			1008
111	Gly Thr Thr Trp Ile Gly Tyr Asp Asp Val Asn Ser Val Gln Arg Lys			
112	325	330	335	
114	gta caa tat gca aaa tca ctt aac ata gga gga tat ttc ttt tgg aca			1056
115	Val Gln Tyr Ala Lys Ser Leu Asn Ile Gly Gly Tyr Phe Phe Trp Thr			
116	340	345	350	
118	gcc gtc ggc gat caa gat tgg aaa atc tcg cga cta qct tcg cag aca			1104
119	Ala Val Gly Asp Gln Asp Trp Lys Ile Ser Arg Leu Ala Ser Gln Thr			
120	355	360	365	
122	tgg act gct t gaaaatcaat ggaggacaag tgaactagag gagtgaaatt			1154
123	Trp Thr Ala			
124	370			

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126 aaataaaaag attatgtta ctgtgttat tcatgtctt taataaatat tccagttgc 1214  
 127 ttgttaaggtaataaaataa tacacaacca gatgtttaa aaaaaaaaaaaaaaaa 1271  
 129 <210> SEQ ID NO: 2  
 130 <211> LENGTH: 371  
 131 <212> TYPE: PRT  
 132 <213> ORGANISM: Helianthus annuus  
 134 <400> SEQUENCE: 2  
 135 Met Glu Phe Leu Lys Ala Pro Thr Leu Leu Leu Val Ile Phe Ser Leu  
 136 1 5 10 15  
 137 Ala Ile Cys Ser Pro Ile Ser Ala Gln Asn Lys Gly Gly Tyr Trp Pro  
 138 20 25 30  
 139 Ser Trp Ala Gln Asp Phe Leu Pro Pro Ser Asn Ile Gln Thr Ala Tyr  
 140 35 40 45  
 141 Phe Thr His Val Tyr Tyr Ala Phe Leu Ser Pro Asn Asn Val Thr Phe  
 142 50 55 60  
 143 Gln Phe Asp Val His Arg Thr Thr Ala Ser Ala Leu Asn Ser Phe Asn  
 144 65 70 75 80  
 145 Thr Ala Leu His Gly Lys Asn Pro Pro Val Lys Thr Leu Phe Ser Ile  
 146 85 90 95  
 147 Gly Gly Ser Ala Gly Val Lys Gln Leu Phe Ser Lys Leu Ala Ser  
 148 100 105 110  
 149 Ser Pro Gly Ser Arg Ala Ala Phe Ile Arg Ser Thr Ile Gln Val Ala  
 150 115 120 125  
 151 Arg Asn Tyr Tyr Phe Asp Gly Ala Asp Leu Asp Trp Glu Tyr Pro Glu  
 152 130 135 140  
 153 Thr Gln Thr Asp Met Asn Asn Phe Gly Leu Leu Leu Asp Glu Trp Arg  
 154 145 150 155 160  
 155 Val Ala Val Asn Asn Glu Ala Thr Ser Thr Gly Lys Pro Arg Leu Leu  
 156 165 170 175  
 157 Leu Ser Ala Ala Thr Arg His Glu Pro Glu Val Arg Asp Asn Gly Val  
 158 180 185 190  
 159 Ala Lys Tyr Pro Val Ala Ser Ile Asn Lys Asn Leu Asp Gly Ile Asn  
 160 195 200 205  
 161 Ala Met Cys Tyr Asp Tyr His Gly Pro Trp Thr Pro Asp Ala Thr Gly  
 162 210 215 220  
 163 Ala Pro Ala Ala Leu Tyr Asn Pro Asn Gly Ser Leu Ser Thr Ser Asn  
 164 225 230 235 240  
 165 Gly Leu Gln Ser Trp Ile Ser Ala Gly Ile Gln Arg Gln Lys Leu Val  
 166 245 250 255  
 167 Met Gly Met Pro Leu Tyr Gly Trp Thr Trp Lys Leu Lys Asn Pro Ser  
 168 260 265 270  
 169 Val Asn Gly Ile Gly Ala Pro Ala Ala Gly Ile Gly Pro Gly Asn Glu  
 170 275 280 285  
 171 Gly Ala Met Leu Tyr Ser Glu Val Gln Gln Phe Asn Ala Gln Asn Asn  
 172 290 295 300  
 173 Ala Arg Val Val Tyr Asp Thr Gln Thr Val Ser Tyr Tyr Ser Tyr Ser  
 174 305 310 315 320  
 175 Gly Thr Thr Trp Ile Gly Tyr Asp Asp Val Asn Ser Val Gln Arg Lys  
 176 325 330 335

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177 Val Gln Tyr Ala Lys Ser Leu Asn Ile Gly Gly Tyr Phe Phe Trp Thr  
 178 340 345 350  
 179 Ala Val Gly Asp Gln Asp Trp Lys Ile Ser Arg Leu Ala Ser Gln Thr  
 180 355 360 365  
 181 Trp Thr Ala  
 182 370  
 185 <210> SEQ ID NO: 3  
 186 <211> LENGTH: 475  
 187 <212> TYPE: DNA  
 188 <213> ORGANISM: Helianthus annuus  
 190 <220> FEATURE:  
 191 <221> NAME/KEY: CDS  
 192 <222> LOCATION: (34)...(325)  
 194 <400> SEQUENCE: 3

195 aacctctcta accactcctt aatcccctcc	aaa atg aag gca ccc acc atg atc	54
196	Met Lys Ala Pro Thr Met Ile	
197	1 5	
199 tgc ttt ctg gtt gca att gca gcc atg atg gtc ttt atg ggc caa	102	
200 Cys Phe Leu Val Ala Val Ile Ala Ala Met Met Val Phe Met Gly Gln		
201 10 15 20		
203 ctc cct gca gcc act gcg gtg act tgc aac tac atg gag ctc gtg cca	150	
204 Leu Pro Ala Ala Thr Ala Val Thr Cys Asn Tyr Met Glu Leu Val Pro		
205 25 30 35		
207 tgt gct ggt gcg atc tca tcg tct cag ccc cca tcg ggc tca tgc tgc	198	
208 Cys Ala Gly Ala Ile Ser Ser Gln Pro Pro Ser Gly Ser Cys Cys		
209 40 45 50 55		
211 aqt aag gta agg gag cag agg ccg tgc ttc tgc gga tac ctc cgg aac	246	
212 Ser Lys Val Arg Glu Gln Arg Pro Cys Phe Cys Gly Tyr Leu Arg Asn		
213 60 65 70		
215 ccg agt ctc cgt cag ttt gtc agc cca gct gca gcc cag aag att gct	294	
216 Pro Ser Leu Arg Gln Phe Val Ser Pro Ala Ala Gln Lys Ile Ala		
217 75 80 85		
219 ayc cag tgt gga gtt agt att cca cag tgc t agaaataatg ttttggttcc	345	
220 Ser Gln Cys Gly Val Ser Ile Pro Gln Cys		
221 90 95		
223 aacttatcatat aatatcatat attgaaatat tttgttgcacat gcaactcatc	405	
224 tactgtatgttta aggtgtttgt ttgtgttgtt aatgaaacaa aggttagttgg tgggtgtqcaa	465	
225 aaaaaaaaaaaaaa	475	
227 <210> SEQ ID NO: 4		
228 <211> LENGTH: 97		
229 <212> TYPE: PRT		
230 <213> ORGANISM: Helianthus annuus		
232 <400> SEQUENCE: 4		
233 Met Lys Ala Pro Thr Met Ile Cys Phe Leu Val Ala Val Ile Ala Ala		
234 1 5 10 15		
235 Met Met Val Phe Met Gly Gln Leu Pro Ala Ala Thr Ala Val Thr Cys		
236 20 25 30		
237 Asn Tyr Met Glu Leu Val Pro Cys Ala Gly Ala Ile Ser Ser Ser Gln		
238 35 40 45		

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Input Set : A:\Seqlist.txt  
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239 Pro Pro Ser Gly Ser Cys Cys Ser Lys Val Arg Glu Gln Arg Pro Cys
240      50           55           60
241 Phe Cys Gly Tyr Leu Arg Asn Pro Ser Leu Arg Gln Phe Val Ser Pro
242 65           70           75           80
243 Ala Ala Ala Gln Lys Ile Ala Ser Gln Cys Gly Val Ser Ile Pro Gln
244           85           90           95
245 Cys
249 <210> SEQ ID NO: 5
250 <211> LENGTH: 849
251 <212> TYPE: DNA
252 <213> ORGANISM: Helianthus annuus
254 <400> SEQUENCE: 5
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256 aattcctcct cttagtcatt tggaaatatt ttgttagact ataactgtta 120
257 tgcgttttgc tatatttctc ctgttaatta gccttgtatt ccagtatata atgatatcaa 180
258 aactctctaa tcaagcagag agagttccct gaattacatc accgctgcc 240
259 ctaagttAAC ttcatccatt aattttgtta acgtgaaagg aaattcggtc attttctatg 300
260 gccgaattgc cttgttagtt cacaAAAattt catataaaac caccgaattt ccgttctcg 360
261 taacagaaaa aatgaatgaa gtaacccag tggactaaaa tggcaacgat gaaaccattt 420
262 tqgatccaca ggcgaaaaat gaaactttt gactaaactg gcgaaaaata aaacttttgg 480
263 actaaactac atgaactaaa atggctttt actaaatTTT aataaccgtt ttaattttat 540
264 aaagagaaaa taaacttac aaaaagcatc gcttgcgttat ttataaaga ttaaagttac 600
265 ttgcacgttc aaacatatgt tactagatga atcaagagtc atgtacaact ctatgtttag 660
266 ataaggTTAC tagatgaata tggatTTGTC atctataagt ctataacttag aaagttcaaa 720
267 gtcaatgatt tgtattgaat actgtttgtt gttgaattca taaaagctt gaatactgtt 780
268 tgcgttgaa ttcataaaAG ctgcgttata agagatcatg ggattcctcg agtattacaa 840
269 cacacgtg
271 <210> SEQ ID NO: 6
272 <211> LENGTH: 1089
273 <212> TYPE: DNA
274 <213> ORGANISM: Helianthus annuus
276 <400> SEQUENCE: 6
277 atcctactac ctcaAAacttt atctaattca tcaacacaac ggaggTTTgg ttatatttgt 60
278 ttggTccatc caaaaggaca aaaatgcact tcatttttac aaaaaaaaaa aaaaaaaaaa 120
279 ctaagtttagt gatttggat aaaaatgacaa acaaaaggac aaaaatgcac ttcatcttac 180
280 caaaaaaaaaa actgaggtag taattttggat gaaaacgaca aaaaaagaca aacctgaaag 240
281 attcaaatgc acaaaaaaaaaat tattttggat gaaacacqca tatatgtatca aacccaaagag 300
282 acgattttaa tattttactc gaaattttaa aagaagttaa tatttagacag gaatcatgtt 360
283 agagacatAT gccaaaccta ttaattttct aagttcaaac aaaaatctat tattttttcc 420
284 aaaccacAGC tataattttat gtaattttat ctctataaat ggacaaagaaa taaaagttt 480
285 ctacaAAacgg taacaacaag gaagctaccc tcgttttgaa gatagttaa acaataatTC 540
286 aactactttc taactacttt ttcacaaga cttaaatttc cacacacatc tttatgacta 600
287 aacttaccat atgtgtatggg ccagtcaacc attaatatgt ctcaaccac aagtggtaa 660
288 accggaccat cagccacttG gccacggggc cagcttagt gaaacccgggg gtgcacaacc 720
289 cctctaattgt ttcggtttaga agtgcAAaat ttacgattt tcgtccgaaa attttcggccc 780
290 accagaacct tttagtcaaaAC ttgcggactg cactttggcc aatgttctat taaggttttt 840
291 attttatTTT tattatTTT tataacgatt ccaaaaaattt ttggacata tacatctgac 900
292 atgcgttata tggatTTGTC gttttttttt gttttttttt tttttttttt tttttttttt 960
293 caccttagatt tqaatttctca ttqqqcccaa tggtctataa ataatgcacc aacccttcg 1020

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**VERIFICATION SUMMARY**

PATENT APPLICATION: US/09/923,844B

DATE: 05/23/2002

TIME: 17:50:13

Input Set : A:\Seqlist.txt

Output Set: N:\CRF3\05232002\I923844B.raw

L:13 M:270 C: Current Application Number differs, Replaced Current Application No

L:13 M:271 C: Current Filing Date differs, Replaced Current Filing Date